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10/688,588	10/18/2003	Robert Kincaid	10031032-1	2257

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EXAMINER	
SIMS, JASON M	

ART UNIT	PAPER NUMBER
1631	

NOTIFICATION DATE	DELIVERY MODE
03/23/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPOPS.LEGAL@agilent.com

Office Action Summary	Application No.	Applicant(s)	
	10/688,588	KINCAID, ROBERT	
	Examiner	Art Unit	
	JASON M. SIMS	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-50 and 56-60* is/are pending in the application.

4a) Of the above claim(s) *15,16,21 and 48* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,17-20,22,40-47,49,50 and 56-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/8/2009 and 5/27/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments, filed 9/5/2008, have been fully considered. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Applicants have amended their claims, filed 9/5/2008, and therefore rejections newly made in the instant office action have been necessitated by amendment.

Claims 15, 16, 21, and 48 have been withdrawn as being drawn to non-elected subject matter.

Claims 1-14, 17-20, 22, 40-47, 49-50, and 56-60 are the current claims hereby under examination.

Claim Rejections - 35 USC § 112

Response to Arguments:

Applicant's arguments, filed 9/5/2008, with respect to all the rejections under 35 USC 112 have been fully considered and are persuasive because of applicant's arguments and amendments to the claims. Therefore, the rejections have been withdrawn.

Claim Rejections - 35 USC § 101

Response to Arguments:

Applicant's arguments, filed 9/5/2008, with respect to the rejection under 35 USC 101 have been fully considered and are persuasive because of applicant's arguments and amendments to the claims. Therefore, the rejection has been withdrawn.

The following rejection is being newly applied with a new analysis in view of In re Bilski:

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-14, 17-20, 22, and 40-43 are rejected under 35 U.S.C. 101 because these claims are drawn to non-statutory subject matter.

Claims 1-14, 17-20, 22, and 40-43 are drawn to a process. A process is statutory subject matter under 35 U.S.C. 101 if: (1) it is tied to a particular machine or apparatus or (2) it transforms an article to a different state or thing (In re Bilski, 88 USPQ2d 1385 Fed. Cir. 2008).

In the instant case, the claims are drawn to a method of displaying and manipulating data. The recited process involves the abstract and computational steps of arranging data in a matrix, converting data values, displaying graphical representations, storing and reordering the data, and displaying the data. As such, the instant claims do not recite any to a particular machine or apparatus, nor do the instant claims involve a transformation of a particular article. Rather, the instant claims are drawn only to an abstract process that only manipulates data and, therefore, are not directed to statutory subject matter.

The claimed subject matter is not limited to a particular apparatus or machine. To qualify as a statutory process, the claims should require use of a machine within the steps of the claimed subject matter or require transformation of an article to a different state or thing. Insignificant extra-solution activity in the claimed subject matter will not be considered sufficient to convert a process that otherwise recites only mental steps into statutory subject matter (In re Grams 12 USPQ2d 1824 Fed. Cir. 1989). Preamble limitations that require the claimed process to comprise machine implemented steps will not be considered sufficient to convert a process that otherwise recites only mental steps into statutory subject matter. The applicants are cautioned against introduction of new matter in an amendment.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 40-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Minor et al. (US A/N 2004/0019466).

The claims are drawn to method of forwarding, transmitting, and receiving data to and from remote locations.

Limitations of claim 1 are not read into the recited claims 40-42, which reasonably read on any system capable of forwarding, transmitting, and receiving data to and from remote locations, wherein if these capabilities are part of a system, it would be inherent that the same system could forward, transmit, and receive data obtained by other methods, such as that of claim 1.

Minor et al. teach claim 4-6 encompassing a system capable of forwarding, transmitting, and receiving data to and from remote locations, which directly anticipate instant claims 40-42.

Claim Rejections - 35 USC § 103

Response to Arguments:

Applicant's arguments with respect to claims 1, 43, and 56 have been considered but are moot in view of the new ground(s) of rejection.

However, applicant argues that the newly amended claim language reciting calculating a pseudo-vector has not been taught by the recited references.

With regards to the newly added claim limitations, Balaban et al. at col. 3, lines 5-11 teach a query that can be submitted to the relational database tables wherein it extracts information from a larger n x m matrix of data and can display or sort and thus reorder the data, such as those genes where the gene expression value is greater than or equal to 100. The query in a sense, selects a set of data, wherein the selected

matched data is equated with having a preset positive value, i.e. selected and the non-matched/selected data will have a null or negative value, thus calculating a pseudo-vector. Furthermore, applicant's definition of a pseudo-vector at paragraphs [0012]-[0014] is broad and reads on a querying technique, such as a pseudo-vector may be calculated by selecting a portion of a row or column of the dataset, i.e. a query.

The following rejections have been necessitated by amendment:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 43, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warrington et al. (P/N 6,884,578; no. 2 reference in IDS submitted 11/6/2008) in view of Balaban et al. (6,185,561; no. 3 reference submitted in IDS 11/6/2008) as evidenced by Byrd et al. (US P/N 5,826,260; no. 4 reference submitted in IDS 11/6/2008).

The claims are directed to a method for displaying and manipulating data to facilitate identification, trends, correlation, or other useful relationships among the data comprising steps of providing data arranged in a matrix, converting the data to graphical representations, displaying the graphical representations, sorting the data based on comparison values, reordering the data, and displaying the rearranged data in the matrix.

With regards to claim 1: Warrington et al. teach limitations of claim 1 at col. 12, lines 41-67, col. 13, lines 1-38 and col. 25, lines 25-44. Warrington et al. discusses at col. 12 and 13, inputting data items associated with entities to be observed, where the data is arranged in an n x m matrix, as it is stored in tables forming a database or comprising a relational database, which reads on data items being arranged in a n x m matrix of rows and columns. Warrington et al. further teach at cols. 12 and 13 the different types of data items being stored wherein the items represent the same characteristics, but may vary in value and the data is converted to graphical representations as they are displayed in readable database form, such as Genbank. Warrington et al. further teach at col. 14, lines 32-48, an embodiment of the invention wherein the data values comprise expression values, but are converted to a quantitative read-out and stored in the database, which reads on converting data values of the identified data items to graphical representations of the data values to be displayed. Warrington et al. further describe at col. 14, lines 32-48, lines 61-67, and col. 15, lines 30-47 that this data can be analyzed to identify patterns and variation, which reads on graphically representing the data values such that comparisons of the graphical

representations among one another allow variations amongst the data values to be identified. Warrington et al. at col. 13, lines 54-58 describe an illustrated example of a computer system that may be used to execute the software of an embodiment of the invention, wherein the system comprises a display. Therefore, it is inherent that Warrington et al. teach a display used for displaying the tables of data and results of the analysis and data manipulation steps, etc.

Warrington et al. suggests, but does not explicitly teach displaying a smaller c x d matrix of data than the n x m matrix of data.

Warrington et al. suggest this because at the referenced columns 12 and 13, they teach designing a relational database made of different tables of varying data. It is an inherent property of relational database design to be able to design tables, i.e. matrices of data, to be of varying size. Warrington et al. describes a relational database of at least three different tables and at col. 16, lines 13-34 describe the different types of data that may fill the tables in the database. Furthermore, Warrington et al. at col.s 20-27, examples 1 and 2, disclose tables of varying sizes. In addition, Warrington et al. at col. 19, lines 7-20 disclose that the taught invention is presented in a range format, which should be understood that this encompasses all variations of the ranges and subranges, i.e. tables of particular size and smaller tables from those tables. Moreover, Warrington et al. do reference Balaban et al. col. 13, lines 35-36, which has been incorporated by reference and Balaban et al. teaches at Fig. 2A a display screen to display mined expression data, i.e. manipulated data.

Balaban et al. at col. 2, lines 23-67 teach basic methods and capabilities of the data mining invention wherein the data mining involves different visualization techniques and different formatting of resulting information to better provide a user with easier visualization and better interpretational abilities. The invention of Balaban et al. is to be able to mine data to provide a user with more helpful and better organized data and visualized data, which suggests displaying different size tables of information including a smaller matrix of data such as a c x d matrix that is smaller than an n x m table.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to have displayed a smaller c x d matrix of data, as suggested by Warrington et al and taught by Balaban et al. This is because designing tables of varying size that comprise a relational database are an inherent property of relational database design, as set forth above. Furthermore, the varying sizes and ranges of data and tables was envisioned and disclosed by Warrington et al. as being encompassed by the taught invention. It would have further been obvious to one of ordinary skill in the art to want to be able to mine data and have different visualization techniques as taught by Balaban et al. This is because displaying subsets of data, i.e. as such in a smaller matrix can be more effective and more easily facilitate the interpretation of experimental data.

Warrington et al. suggest, but do not explicitly teach selecting a row or column, i.e. calculating a pseudo-data vector, sorting and thus reordering the order of arrangement of the rows of data in the n x m matrix based on a comparison of the values of the identified data items in the row or column, i.e. the pseudo-vector.

Warrington et al. suggests this because Warrington et al. teach and describe a relational database, wherein it is an inherent property of relational database design that rows or columns can be sorted and reordered based on varying criteria or rules created by the designer.

Balaban et al. at col. 3, lines 5-11 teach a query that can be submitted to the relational database tables wherein it extracts information from a larger n x m matrix of data and can display or sort and thus reorder the data, such as those genes where the gene expression value is greater than or equal to 100. The query in a sense, selects a set of data, wherein the selected matched data is equated with having a preset positive value, i.e. selected and the non-matched/selected data will have a null or negative value, thus calculating a pseudo-vector. The stored data is not necessarily in an order from least expression value for a gene to greatest expression value for a gene. Thus the query itself mines the data of those genes whose expression value is greater than 100 and thus reorders the data to be better visualized by a user. Furthermore, Balaban et al. at col. 5, lines 54-56 describes an expression mining database where the user can query and mine the data, wherein the type of querying can vary depending on the user and questions that want to be answered. It is therefore implied that the mined data as taught by Balaban et al. incorporates the capability of sorting and reordering the expression data as it is a common goal of any data mining to be able to sort and reorder data. Moreover it is evidenced by Byrd, Jr et al. at the abstract and claims 12, 14, and 28 that data can be reordered based on query elements when being mined and it is

common to those of ordinary skill in the art to implement reordering functionality when designing data mining tools.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to want to be able to mine data by sorting and reordering the data and have different visualization techniques as taught by Balaban et al. in the method of Warrington et al. because it can be more effective and is a goal of the researcher to be able to visualize and manipulate data in customizable ways in order to be able to more effectively interpret experimental data. Furthermore, the differences between the claimed invention and the prior art were encompassed in known variations or in a principal known in the prior art.

Warrington et al. do not explicitly teach displaying d rows and from the reordered n x m matrix for observation by a user

Again, Warrington et al. suggest this because at the referenced columns 12 and 13, they teach designing a relational database made of different tables, i.e. and rows, of varying data. It is an inherent property of relational database design to be able to design tables, i.e. matrices of data, to be of varying size. Warrington et al. describes a relational database of at least three different tables and at col. 16, lines 13-34 describe the different types of data that may fill the tables in the database. Furthermore, Warrington et al. at col.s 20-27, examples 1 and 2, disclose tables of varying sizes. In addition, Warrington et al. at col. 19, lines 7-20 disclose that the taught invention is presented in a range format, which should be understood that this encompasses all

variations of the ranges and subranges, i.e. tables of particular size and smaller tables from those tables, i.e. rows.

Balaban et al. at col. 2, lines 23-67 teach basic methods and capabilities of the data mining invention wherein the data mining involves different visualization techniques and different formatting of resulting information to better provide a user with easier visualization and better interpretational abilities. The invention of Balaban et al. is to be able to mine data to provide a user with more helpful and better organized data and visualized data, which implies that its capable of displaying different information including a row from an n x m table, wherein the data is the reordered data.

Therefore, it would be obvious to one of ordinary skill in the art at the time of the instant invention to have displayed a row of data, that was reordered as suggested by Warrington et al. in the method of Balaban et al. This is because designing tables of varying size that comprise a relational database are an inherent property of relational database design. Furthermore, the varying sizes and ranges of data and tables, i.e. and rows, was envisioned and disclosed by Warrington et al. as being encompassed by the taught invention. This is because displaying subsets of data, i.e. as such in a smaller matrix can be more effective and more easily facilitate the interpretation of experimental data.

Claims 2-5, 8-13, 17-20, 22, 44-47, 49-50 and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warrington et al. (P/N 6,884,578; no. 2 reference in IDS submitted 11/6/2008) in view of Balaban et al. (6,185,561; no. 3

reference submitted in IDS 11/6/2008) as evidenced by Byrd et al. (US P/N 5,826,260; no. 4 reference submitted in IDS 11/6/2008), as applied to claim 1 above and further in view of Balaban et al. (US A/N 2003/0028501).

Warrington et al. and Balaban et al. do not explicitly teach the method of claim 2 of providing at least one row of annotative data in at least one cell, selecting a row, and converting the select row of annotative data items to a pseudo-data vector, by assigning data values to the annotative data items.

Balaban et al. ('501) teach at Figs. 4A and 9A-9F and paragraph [0045] an LIMS system comprising a database of annotative data. Balaban et al. ('501) further teach at paragraph [0071] that the annotations can be user defined, which reads on applicant's definition of a pseudo-vector at paragraphs [0012]-[0013] wherein a user input may be provided for, wherein a user or the system may input predetermined values to be substituted for the descriptive data values and a pseudo-vector may be calculated from arbitrary data input from a user. Balaban et al. ('501) further teach at paragraph [0073] a query screen that provide the ability to update annotations along with other variations, modifications, and alternatives.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to have incorporated rows of annotative data as taught by Balaban et al. ('501) into the relational databases taught by Warrington et al. and Balaban et al. for storing data. This is because the differences between the claimed invention and the prior art were encompassed in known variations or in a principal known in the prior art. Furthermore, one of ordinary skill in the art would have recognized that applying the

known technique of designing relational databases to store, manipulate, and visualize data in various ways would have yielded predictable results.

Warrington et al. and Balaban et al. and Balaban et al. ('501) do not explicitly teach wherein the annotative data comprises binary data as in claim 3.

Balaban et al. at paragraphs [0011] – [0014] ('501) teach a laboratory information management system which manages and tracks a plurality of information, such as information about experiments, the history of the steps of producing a sample, etc., wherein annotative data comprising binary data is an obvious variation for the listed types of data being managed, stored, manipulated, and annotated.

One of ordinary skill in the art at the time of the instant invention would have immediately envisaged applying the known technique of information management as taught by Balaban et al. to managing annotative data comprising binary data and the results would have been predictable. Furthermore, the differences between the claimed invention and the prior art were encompassed in known variations or in a principal known in the prior art.

The combination of references suggest, but do not explicitly teach the limitations of claims 6-7 wherein color-coding particular cells is taught.

The references suggest this because they teach various forms of manipulating and displaying data. For instance, Balaban et al. ('501) teach at paragraphs [0066]-[0069] displays may be in various forms, such as bar graphs, histogram graphs wherein a user can specify options such as range and color, etc. Therefore, using color as a way of displaying and manipulating data is recognized by Balaban et al. ('501).

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to have used color for displaying as taught by Balaban et al. ('501) for color-coded cells of at least one row of data. This is because using color as a way of displaying and manipulating data is recognized by Balaban et al. ('501). Therefore, the differences between the claimed invention and the prior art were encompassed in known variations or in a principal known in the prior art. Furthermore, one of ordinary skill in the art would have recognized that the results of the combination were predictable.

With regards to claims 4-5, 8-13, 17-20, 22, 44-47, 49-50 and 57-60 each of said claims are all obvious variations of the same data manipulation methods as discussed with the teachings of claim 1. For example, claim 4 is a method of displaying a row of annotative data adjacent the display of the first c x d graphical representations. Claim 12 reads on similarity sorting the rows of the n x m matrix. Each of said claims 4-5, 8-13, 17-20, 22, 44-47, 49-50 and 57-60 would have been obvious to one of ordinary skill in the art at the time of the instant invention because they all encompass known data manipulation methods. For example, ordering data items based on a similarity sorting is a known data manipulation method as evidence by Byrd et al. at the abstract, wherein similarity sorting is discussed as in claim 12. Furthermore, the method steps of claims, such as claim 4 are considered a further duplicated step from claim 1 wherein an additional row of data is displayed. This is because the steps of claim 4 encompass similar steps of claim 1 with regards to displaying a smaller set of data relative to a matrix wherein the smaller display is based on reordered data items.

Claims 1 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warrington et al. (P/N 6,884,578) in view of Balaban et al. (6,185,561) as evidenced by Byrd et al. (US P/N 5,826,260) as applied to claims 1 and 13 above and further in view of Schadt et al. (US P/N 7,035,739).

The combination of references set forth above suggest, but do not explicitly teach calculating a distance value between rows assigned a similarity value wherein the calculation is a Euclidean distance as in claim 14.

The references suggest this because Warrington et al. at col. 27, lines 25-44 discuss data items based on gene expression data, but derived from GeneCluster software analysis. For example, GENECLUSTER performs a data analysis that involves clustering data such as hierarchical clustering, Bayesian, and k-means clustering wherein these types of clustering methods calculating a distance based on a Euclidean distance is commonly used and well known methods.

For example, Schadt et al. teach starting at col. 8, lines 21-47 using a Euclidean distance is a well known statistical method in the art. Furthermore, Schadt et al. teach at col. 11, lines 3-27 using data stored in a database to perform the data manipulation step.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to have calculated a distance using a a Euclidean distance, or a squared Euclidean distance as taught by Warrington et al. and Schadt et al., in the method made obvious by Warrington, Balaban, and Byrd for manipulating data. This is

because one of ordinary skill in the art would find the differences between the claimed invention and the prior art were encompassed in known variations or in a principal known in the prior art. Furthermore, one of ordinary skill in the art would have recognized that the results of the combination were predictable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Sims, whose telephone number is (571)-272-7540.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marjorie Moran can be reached via telephone (571)-272-0720.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the Central PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The Central PTO Fax Center number is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

// Jason Sims //

/ERIC S. DEJONG/

Primary Examiner, Art Unit 1631